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HIV testing among clients in high HIV prevalence venues: disparities between older and younger adults

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The Centers for Disease Control and Prevention recommends routine human immunodeficiency virus (HIV) testing of every client presenting for services in venues where HIV prevalence is high. Because older adults (aged ≥50 years) have particularly poor prognosis if they receive their diagnosis late in the course of HIV disease, any screening provided to younger adults in these venues should also be provided to older adults. We examined aging-related disparities in recent (past 12 months) and *ever* HIV testing in a probability sample of at-risk adults (N = 1238) seeking services in needle exchange sites, sexually transmitted disease clinics, and Latino community clinics that provide HIV testing. Using multiple logistic regression with generalized estimating equations, we estimated associations between age category (<50 years vs. ≥50 years) and each HIV testing outcome. Even after controlling for covariates such as recent injection drug use, older adults had 40% lower odds than younger adults did of having tested in the past 12 months (odds ratio [OR] = 0.6; 95% confidence interval [CI] = 0.40–0.90) or *ever* (OR = 0.6; 95% CI = 0.40–0.90). Aging-related disparities in HIV testing exist among clients of these high HIV prevalence venues and may contribute to known aging-related disparities in late diagnosis of HIV infection and poor long-term prognosis.

Keywords: AIDS serodiagnosis; aging; HIV infections/diagnosis; health services accessibility

Introduction

The Centers for Disease Control and Prevention (CDC) recommends routine human immunodeficiency virus (HIV) testing in all health care settings where HIV prevalence exceeds 0.1% (i.e., high prevalence venues) and at least annual testing for anyone with known HIV risk (Branson et al., 2006). To provide routine testing is to screen every client presenting for services. Efforts to routinize HIV testing began nearly a decade ago in response to epidemiologic trends indicating at least 20% of HIV-infected persons are unaware of their HIV-positive status and risk-based screening (i.e., only testing people who report risk behaviors or risk group membership) misses cases of undiagnosed HIV infection among people presumed to have minimal HIV risk (Chen et al., 2012; Duffus et al., 2009; MacKellar et al., 2005). HIV testing is available at low cost or for free at county and municipal public health venues throughout the nation (Centers for Disease Control and Prevention, 2001; Wortley et al., 1995). Routine testing is an efficient, cost-effective way to identify undiagnosed HIV infections (Bos, van der Meijden, Swart, & Postma, 2002; Paltiel et al., 2005). Ultimately, it improves HIV/acquired immune deficiency syndrome (AIDS) prognosis and simplifies the management of HIV disease (Gardner, McLees, Steiner, Del Rio, & Burman, 2011; Hall, McDavid, Ling, & Sloggett, 2006).

Routine HIV testing may be particularly beneficial for at-risk older adults, a category CDC defines as age ≥ 50 years (Centers for Disease Control and Prevention, American Association of Retired Persons, & American Medical Association, 2009; Tangredi, Danvers, Molony, & Williams, 2008). HIV/AIDS prevalence is increasing rapidly in this age category (Centers for Disease Control and Prevention, 2006), and HIV-infected older adults are disproportionately diagnosed late in the course of HIV disease (Coon, Lipman, & Ory, 2003; Zingmond et al., 2001). Late diagnosis is associated with rapid progression to AIDS and AIDS-related mortality (Kirk & Goetz, 2009; May et al., 2011). The disproportionate burden of late diagnoses among older adults suggests they are not regularly screened for HIV infection. In mainstream population-based studies, only 2% of older adults report receiving an HIV test in the past 12 months as recommended; approximately, 16% of sexually active older

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adults report *ever* testing (Kaiser Family Foundation, 2012; Lindau et al., 2007; Schensul, Levy, & Disch, 2003). Such low levels of testing are inappropriate in needle exchange sites (NES), STD clinics, and other high HIV prevalence settings where CDC recommends that all clients routinely receive HIV tests (Branson et al., 2006). If, as some researchers (Coon et al., 2003) suggest, ageism limits older adults' access to HIV services, then older clients may be less likely than younger ones to receive HIV services even in high HIV prevalence settings.

This study sought to determine whether aging-related disparities in HIV testing exist among clients in high HIV prevalence settings. Drawing on the Behavioral model of Healthcare utilization (Aday & Andersen, 1974; Andersen, 1995; Andersen & Newman, 1973), we conceptualize HIV testing to be influenced by clinical context as well as factors predisposing one to obtain a test (e.g., demographics), enabling access to it (e.g., having a usual source of care) and indicating a need for it (e.g., risk behaviors). Relatively few HIV prevention efforts target older adults, many of whom have low perceived HIV risk (Sankar, Nevedal, Neufeld, Berry, & Luborsky, 2011); therefore, we hypothesized that even in settings where HIV prevalence is high, HIV testing is available and all patients should be screened, relatively fewer older adults than younger ones will have recently or *ever* received HIV tests. Using data from a probability sample of adults recruited from NES, STD clinics, and high HIV prevalence Latino public health clinics, we conducted two parallel analyses comparing the odds of recent and lifetime HIV testing among otherwise similar older and younger at-risk adults.

Methods

Population and setting

This was a cross-sectional analysis of data from L.A. VOICES, a representative sample survey of underserved Los Angeles residents seeking services in high HIV prevalence venues. A detailed description of the L.A. VOICES study design and methods are published elsewhere (Newman et al., 2009). Briefly, we surveyed racially and ethnically diverse adults (N = 1302) presenting for services at STD clinics (n = 12), NES (n = 8), and Latino community clinics that provide HIV services (n = 8) (Kinsler et al., 2009). We used multi-stage random sampling to select venues within the three venue-based strata, 4-hour visit sessions within each selected venue and clients presenting during each selected 4-hour session. Trained research staff collected the data between August 2006 and May 2007 via computer-assisted, face-to-face interviews in English or Spanish during participants' visits. Inclusion criteria were aged ≥17 years, not employed by the site where recruited, and not known to be HIV positive at the time of recruitment. All participants provided informed consent and received $20 for participating. The analysis was based on those for whom data on age and HIV testing were complete (N = 1238; 95.1% of all L.A. VOICES participants). The University of California at Los Angeles, Los Angeles County Department of Public Health, and University of Toronto institutional review boards reviewed and approved the study protocol.

Measures

The first dependent variable, *recent HIV testing* (i.e., tested for HIV infection in the past 12 months), reflects the CDC recommendation (Branson et al., 2006) that persons in high-risk categories and others at risk for HIV infection receive HIV testing at least annually. We computed the variable based on the interview date and self-reported date of last HIV test. We coded the variable yes = "1" if the last test occurred within 12 months of the interview and no = "0" if not.

The second dependent variable, *ever tested for HIV infection*, assessed a respondent's lifetime HIV testing behavior by asking, "Have you ever had a test for HIV?" Response options included yes, no, don't know, and refused. We coded responses of yes "1," and no "0." Responses of don't know and refused were coded as missing and excluded from the analyses.

The main independent variable, *age category*, was derived from the continuous measure of self-reported age in years. We coded age category "1" if respondents were aged ≥50 years and coded it "0" if they were aged <50 years.

Based on the conceptual model, we included eight predisposing, enabling, and need factors as covariates.

Predisposing factors

Sex was self-reported as male or female. A single item categorized *race/ethnicity* as Hispanic/Latino, non-Hispanic white, non-Hispanic black or African-American, non-Hispanic Asian or Pacific Islander, non-Hispanic American Indian or Alaska Native, "other" race/ethnicity, or as multiple racial/ethnic backgrounds. The latter two categories were named in a follow-up, open-ended item. *Educational attainment* was an ordinal variable with response options of less than high school, high school diploma or General Educational Development, some college, and college degree or higher.

Enabling factors

Current source of *health insurance*, if any, was assessed from seven items asking whether participants had MediCal (Medicaid); Medicare; CHAMPUS/veteran's; private insurance; student insurance; and any other source of health insurance. We collapsed the variable into three

categories of uninsured, public insurance, or private/employer insurance. *Usual source of health care* was a binary variable coded "1" if participants responded yes to an item asking whether they had a usual source of care, and "0" if they indicated no usual source of care.

Need factors

To assess *perceived HIV risk*, we adapted an existing eight-item summative scale (Cronbach's α = 0.59) (DeHart & John, 1997) with response options on a Likert-type scale ranging from strongly disagree to strongly agree. Response values were transformed to a standardized 100-point scale in which higher scores reflected higher perceived risk of acquiring HIV. Using two binary variables, we assessed membership in each of two high-risk transmission categories. *Males who have sex with other males (MSM)* was a binary variable assessed by comparing participants' own sex and the reported sex(es) of their sexual partners based on a series of questions about recent and lifetime sexual behaviors. Recent *injection drug use* (IDU) was assessed via one item asking, "How many times did you inject drugs in the *last 30 days*?" We created a binary variable coded "1" if participants reported any IDU in the past 30 days and coded "0" if they report no IDU in the past 30 days.

Data analysis

We first computed descriptive statistics for all variables, including univariate frequencies, missings, and skewness. Using χ^2 for categorical variables and *t*-tests for continuous ones, we explored predisposing, enabling, and need factors by age category and compared the proportions of older and younger adults who reported recent and ever HIV testing. Using unadjusted and weighted adjusted analyses, we examined associations between age category and each HIV testing outcome separately. Perceived HIV risk may decrease with age; therefore, we examined potential interaction between age category and perceived HIV risk, but found no significant association. Each adjusted analysis involved multiple logistic regression with generalized estimating equations (GEE) and controlled for the aforementioned covariates (e.g., perceived risk). The GEE statistical technique accounted for the complex survey design and variance clustering at the venue level (Stokes, Davis, & Koch, 2000). Although venue was the stratification variable in the sampling strategy, we also conducted sensitivity analyses to determine whether the estimates in our focal relationships change by including venue in the models as a covariate. We conducted the analysis using Stata software version 10 (Stata Corporation, 2007).

Results

Participant characteristics

The sample (N = 1238) comprised 1012 (81.7%) adults aged <50 years and 226 adults (18.3%) aged ≥50 years. Table 1 lists selected sample characteristics by age category; the P values reflect comparisons between older and younger adults on each variable. Participants ranged in age from 17 to 85 years (data not shown). Compared to younger adults, greater proportions of older adults were NES clients (51.3% vs. 26.9%), males (64.6% vs. 55.2%), unemployed or retired (69.9% vs. 43.5%), and lacked a high school diploma (39.8% vs. 27.9%). Median household income ranged from $0 to $300,000 for younger adults and $0 to $120,000 for older adults (data not shown). Greater proportions of older adults compared with younger adults had public or private health insurance and a usual source of health care. The distributions of older and younger adults did not vary by race/ethnicity or HIV knowledge. Recent IDU was significantly higher among older adults, but perceived HIV risk and MSM sexual contact were higher among younger adults.

Descriptive statistics on HIV testing by age category

Table 2 presents histories of recent and lifetime HIV testing by age category. P values from the statistical tests compare older and younger testers on each variable. Though 66.3% (n = 821) of the sample had tested for HIV infection at least once in the past 12 months as recommended, nearly one-third (31.3%, n = 317) of younger adults and nearly half (44.3%, n = 100) of older adults had not (Table 2). Among recent non-testers, greater proportions of older adults than younger adults were female, Latino, STD clinic or Latino clinic clients, employed, uninsured or privately insured, lacking health care, and not recently engaged in MSM behavior.

While 83.5% (n = 1034) of the sample had *ever* received HIV testing, 15% (n = 152) of younger adults and 23% of older adults (n = 52) had *never* done so (Table 2). Among never testers, greater proportions of older vs. younger non-testers were females, Latino, STD clinic clients, employed, uninsured or privately insured, lacked health care, and did not report MSM behavior. As with recent testers, older and younger *ever* testers had similar levels of HIV knowledge, but older adults had lower perceived risk (mean scores of 2.9 vs. 3.1, P = 0.0032).

Age category and recent HIV testing

The unadjusted association between age category and recent HIV testing (odds ratio [OR] = 0.6; 95% confidence interval [CI] = 0.4–0.95) indicated 40%

Table 1. Unweighted characteristics of younger and older adults seeking services at needle exchange sites, STD clinics, and Latino community-based clinics ($N = 1238$).[a]

	Age <50 years ($n = 1012$)		Age <50 years ($n = 226$)		Total[b]		P
Venue, *n* (%)							
STD clinic	400	(39.5)	27	(12.0)	427	(34.5)	<0.0001
Needle exchange site	272	(26.9)	116	(51.3)	388	(31.3)	
Latino clinic	340	(33.6)	83	(36.7)	423	(34.2)	
Sex, *n* (%)							
Female	453	(44.8)	80	(35.4)	533	(43.1)	0.0102
Male	559	(55.2)	146	(64.6)	705	(57.0)	
Race/ethnicity, *n* (%)							
Hispanic/Latino	501	(49.5)	104	(46.0)	605	(48.9)	0.4771
White	186	(18.4)	41	(18.1)	227	(18.3)	
Black	208	(20.6)	57	(25.2)	265	(21.4)	
Other	117	(11.6)	24	(10.6)	141	(11.4)	
Educational attainment, *n* (%)							
<HS	282	(27.9)	90	(39.8)	372	(30.1)	0.0026
HS degree or GED	289	(28.6)	62	(27.4)	351	(28.4)	
Some college	312	(30.8)	54	(23.9)	366	(29.6)	
Bachelor's degree or higher	129	(12.8)	20	(8.8)	149	(12.0)	
Employment status, *n* (%)							
Currently unemployed or retired	440	(43.5)	158	(69.9)	598	(48.3)	<0.0001
Currently employed	572	(56.5)	68	(30.1)	640	(51.7)	
Monthly income in $, mean (SD)	2246	(10,582)	1882	(8141)	2180	(10,177)	0.5687
Insurance status, *n* (%)							
Uninsured	526	(52.3)	106	(46.9)	632	(51.3)	0.0014
Public insurance	258	(25.7)	84	(37.2)	342	(27.8)	
Private insurance	222	(22.1)	36	(15.9)	258	(20.9)	
Usual source of care, *n* (%)							
No	340	(33.6)	44	(19.5)	384	(31.0)	<0.0001
Yes	672	(66.4)	182	(80.5)	854	(69.0)	
Where usual source of care, *n* (%)							
Private doctor	181	(22.1)	46	(22.8)	227	(22.3)	0.0867
Community clinic	477	(58.3)	107	(53.0)	584	(57.3)	
Hospital clinic	106	(13.0)	34	(16.8)	140	(13.7)	
ER	44	(5.4)	8	(4.0)	52	(5.1)	
Other	10	(1.2)	7	(3.5)	17	(1.7)	
HIV knowledge, mean (SD)	0.59	(0.1)	0.58	(0.1)	0.59	(0.14)	0.2811
Perceived risk, mean (SD)	3.06	(0.8)	2.92	(0.8)	3.04	(0.8)	0.0173
MSM status, *n* (%)	179	(17.7)	22	(9.7)	201	(16.2)	0.0034
IDU in past 30 days, *n* (%)	234	(23.1)	86	(38.1)	320	(25.9)	<0.0001

[a]Data are rounded and exclude missings; therefore, they may not sum to 100%. Data were missing for the following variables as indicated: monthly income ($n = 13$), insurance status ($n = 6$), where usual source of care ($n = 218$), HIV knowledge ($n = 19$), perceived HIV risk ($n = 1$).
[b]Column frequency and total percentage.
STD, sexually transmitted disease; HS, high school; GED, general education development; ER, emergency room; MSM, men who have sex with men; IDU, injection drug use

Table 2. HIV Tested in the Past 12 Months and *Ever* HIV Tested by Age Category (<50 vs. ≥ 50 years) (N = 1,238)[a]

	HIV Tested past 12 months, n = 821			*Ever* HIV Tested, n = 1,034		
	<50 yrs	>50 yrs	p	<50 yrs	>50 yrs	p
Overall	695	126		860	174	
Sex, n (%)			0.0009			0.0011
Female	303 (43.6)	35 (27.8)		382 (44.4)	54 (31.0)	
Male	392 (56.4)	91 (72.2)		478 (55.6)	120 (69.0)	
Race, n (%)			0.0356			0.0893
Latino	308 (44.3)	39 (31.0)		397 (46.2)	66 (37.9)	
White	129 (18.6)	26 (20.6)		172 (20.0)	35 (20.1)	
Black	173 (24.9)	43 (34.1)		190 (22.1)	53 (30.5)	
Other	85 (12.2)	18 (14.3)		101 (11.7)	20 (11.5)	
Venue, n (%)			<0.0001			<0.0001
STD[b] clinic	332 (47.8)	21 (16.7)		373 (43.4)	22 (12.6)	
Needle exchange site	191 (27.5)	84 (66.7)		249 (29.0)	107 (61.5)	
Latino clinic	172 (24.8)	21 (16.7)		238 (27.7)	45 (25.9)	
Employment status, n (%)			<0.0001			<0.0001
Unemployed or retired	301 (43.3)	91 (72.2)		374 (43.5)	127 (73.0)	
Employed	394 (56.7)	35 (27.8)		486 (56.5)	47 (27.0)	
Insurance status, n (%)			0.0009			0.0003
Uninsured	355 (51.4)	50 (39.7)		438 (51.2)	75 (43.1)	
Public	178 (25.8)	53 (42.1)		230 (26.9)	73 (42.0)	
Private	158 (22.9)	23 (18.3)		187 (21.9)	26 (14.9)	
Have usual source of care, n (%)			0.0087			<0.0001
No	237 (34.1)	28 (22.2)		297 (34.5)	33 (19.0)	
Yes	458 (65.9)	98 (77.8)		563 (65.5)	141 (81.0)	
Where usual source of care, n (%)			0.0008			0.0179
Private doctor	132 (23.7)	26 (23.2)		156 (22.6)	36 (22.9)	
Community clinic	310 (55.6)	47 (42.0)		390 (56.4)	74 (47.1)	
Hospital clinic	75 (13.4)	26 (23.2)		94 (13.6)	32 (20.4)	
ER[b]	33 (5.9)	6 (5.4)		41 (5.9)	8 (5.1)	
Other place	8 (1.4)	7 (6.3)		10 (1.5)	7 (4.5)	
HIV knowledge, range 0–1 (s.d.)[b]	0.59 (0.1)	0.59 (0.1)	0.8581	0.59 (0.1)	0.59 (0.1)	0.9135
Perceived risk, mean (s.d.) [b]	3.13 (0.8)	2.97 (0.9)	0.0387	3.10 (0.8)	2.89 (0.9)	0.0032
Risk Category						
MSM[b] status	147 (21.2)	15 (11.9)	0.0164	172 (20.0)	19 (10.9)	0.0049
IDU[b] in past 30 days	163 (23.5)	62 (49.2)	<0.0001	216 (25.1)	79 (45.4)	<0.0001
Monthly income ($), mean (s.d.)[b]	2,369 (12,471)	1,379 (2,021)	0.0520	2,251 (11,259)	1,986 (9,258)	0.7420

[a] Values may not sum to 100% due to missing observations on each of the following variables: usual source of care (recent HIV tested, 151 missings; ever HIV tested, 186 missings), insurance status (recent HIV tested, 4 missings) HIV knowledge (recent HIV tested, 10 missings; ever HIV tested, 18 missings), perceived HIV risk (past 12 months, 1 missing; ever tested, 1 missing), and monthly income (past 12 months, 8 missings).

[b] STD = sexually transmitted disease; ER = emergency room; MSM = men having sex with men; IDU = injection drug use

Table 3. Adjusted logistic regression model of tested for HIV infection in the past 12 months (N = 1231).

	AOR	95% CI	*p*
Age category (≥50)	0.6	[0.4–0.9]	0.013
Sex (male)	0.9	[0.6–1.3]	0.592
Race/ethnicity			
Black	2.0	[1.1–3.7]	0.021
Hispanic	0.6	[0.4–1.0]	0.056
Other race/ethnicity	1.1	[0.6–2.1]	0.850
Educational attainment (ref. = college degree or higher)			
<HS	0.5	[0.2–0.8]	0.011
HS degree or GED	0.5	[0.3–0.9]	0.029
Some college education	0.7	[0.4–1.3]	0.265
Have usual source of care	1.1	[0.7–1.8]	0.661
Insurance status (ref. = private)			
Public insurance	1.2	[0.8–2.0]	0.374
No insurance	1.1	[0.7–1.8]	0.691
Perceived HIV risk	1.5	[1.2–1.8]	0.000
MSM status	1.6	[1.0–2.5]	0.031
Injection drug use in past 30 days	1.3	[0.8–2.1]	0.272

AOR, adjusted odds ratio; CI, confidence level;
ref, referent; HS, high school; GED, general education development; MSM, men who have sex with men.

lower odds of testing for older than for younger clients. In the adjusted models (Table 3), which controlled for demographic factors, having a usual source of care, insurance status, perceived HIV risk, and MSM or IDU risk behavior, the relationship remained essentially unchanged. Similar though somewhat less extreme findings (OR = 0.7; 95% CI = 0.5–1.0) were observed when venue was included in the models as a covariate (data not shown).

Age category and lifetime HIV testing

The unadjusted association between age category and lifetime HIV testing (OR = 0.5; 95% CI = 0.3–0.8) indicated a nearly 50% lower odds of testing for older compared with younger clients. In the adjusted models, which controlled for the aforementioned covariates, the odds of *lifetime* HIV testing improved only 8% for older adults (OR = 0.6; 95% CI = 0.4–0.9). As with recent HIV testing, the odds of *lifetime* testing were 40% lower for older adults than for younger adults, controlling for covariates. The estimate (OR = 0.7; 95% CI = 0.4–1.1) obtained by including venue in the model was not significant (data not shown).

Discussion

Despite current recommendations that every client in high HIV prevalence settings receive routine HIV testing during her/his visit, substantial proportions of these NES, STD clinic, and high HIV prevalence Latino health clinic clients had not done so. As hypothesized, significantly greater proportions of older than younger clients had tested neither recently nor ever. Consistent with the existing literature, older adults had lower perceived HIV risk than younger adults did (Maes & Louis, 2003; Ostermann, Kumar, Pence, & Whetten, 2007). After controlling for risk behaviors and other factors, however, older adults still had 40% lower odds of recent or lifetime HIV testing relative to younger adults. These aging-related disparities offer support for the hypothesis (Coon et al., 2003) that even among at-risk persons older adults may receive fewer HIV services than younger adults do.

The observed HIV testing patterns fall within previously published ranges. In prior research, approximately 27% of older adults in high prevalence venues (Ford, Wallace, Newman, Lee, & Cunningham, 2013), but 40% of those in a lower prevalence population-based survey (Kaiser Family Foundation, 2009) and nearly 80% of those in a nationally representative, mainstream sample (Harawa, Leng, Kim, & Cunningham, 2011) had never tested. Prior qualitative research suggests that what motivates testing (e.g., perceived risk, remembering the beginning of the epidemic) differs for gay men, heterosexual persons, and injection drug users (Lekas, Schrimshaw, & Siegel, 2005).

Where individuals sought services partially explains the HIV testing patterns. Among older clients, greater proportion of NES clients than STD clinic or Latino clinic clients reported recent or lifetime HIV testing. Among NES clients, a greater proportion of older adults than younger adults reported recent or lifetime HIV testing. Together with prior research, these findings suggest NES clients may differ from clients of STD and Latino clinics. They may use the service more often (e.g., to obtain needles frequently) or be less likely to obtain services in formal health care settings (Thrasher, Ford, & Nearing, 2005; Turner, Harripersaud, Crawford, Rivera, & Fuller, 2013). NES may be useful venues for delivering HIV services to "hard-to-reach" older adults (Turner et al., 2013; Wood, Kerr, Tyndall, & Montaner, 2008).

As compared to whites, the odds of testing were two times higher for blacks, but 40% lower for Latinos. Blacks test more than members of other groups do, but may do so late in the course of HIV infection (Ford, Daniel, & Miller, 2006; Kaiser Family Foundation, 2009, 2012). That 48.9% of our sample was Latino reflects the demographics of Los Angeles (47.7% Latino) (U.S. Census Bureau, 2011). Though Latinos have disproportionately high rates of HIV/AIDS, we observed relatively low levels of HIV testing among them, especially among older Latinos. Acculturation and access to care are generally associated with HIV testing among Latinos (Kinsler et al., 2009); whether they explain the Latino aging-related disparity requires further research.

A gap between current HIV testing recommendations and practices may exist in these settings. Low perceived risk partially explains testing among older adults; however, the relationship between perceived risk and HIV testing is complicated (Ford et al., 2006; Kowalewski, Henson, & Longshore, 1997). Even older adults with high perceived risk may not be screened by their providers (Emlet, 2006; Lekas et al., 2005). Though our measure of perceived risk did not have high internal reliability (Cronbach's $\alpha = 0.59$), we also assessed risk behaviors. Controlling for perceived and behavioral risk, older adults had lower odds of HIV testing.

Why clients who obtain some services (e.g., clean needles) in these venues do not obtain HIV testing is unclear. Most participants, including nearly 80% of older adults, reported a usual source of care. Yet, HIV testing was suboptimal across age categories, which suggests the venues face difficulties (e.g., limited funding) implementing routine testing. The percentage of US residents with a usual source of care will increase with implementation of the US Affordable Care Act (ACA) ("Patient Protection and Affordable Care Act," 2010). Improving delivery of HIV testing in diverse settings and creating linkages between health care and aging services may be one way to expand HIV screening under the ACA (Emlet & Poindexter, 2004; Ford, Tilson, Smurzynski, Leone, & Miller, 2008; Linsk, Fowler, & Klein, 2003).

Future research should determine whether aging-related disparities in recent HIV testing contribute to aging-related disparities in disease progression and AIDS. Though the findings are not generalizable to countries with policies (e.g., regarding needle exchange) or practices (e.g., regarding access to health care) that differ from those of the USA, aging-related disparities may also exist in other countries.

Policy implications to address the disparities include routinizing HIV testing in high prevalence settings. Routinization reduces the possibility of missing undiagnosed cases of HIV infection and circumvents stigma and low perceived HIV risk among older adults. Currently, the recommendations apply to adults age ≤64 years; however, our sample included persons older than 64. Because routine HIV testing is cost-effective and late diagnosis is particularly disadvantageous for older adults, we recommend revising the recommendations to clarify that all clients in high HIV prevalence venues should receive HIV screening regardless of age. Policies are also needed to remove structural barriers (e.g., contradictory state policies) that hamper compliance with the recommendations (Mahajan, Stemple, Shapiro, King, & Cunningham, 2009).

Study limitations include its cross-sectional design, which prevents us from establishing whether the associations are causal. The self-reported HIV testing outcomes may overestimate actual rates of testing (Phillips & Catania, 1995). Recent HIV testing was the best proxy for routine HIV testing in the data-set because it reflects the recommendation that at-risk persons undergo HIV testing at least annually; however, our measure does not directly assess opt-out HIV screening during a specified visit. Indicators of specific recent sexual behaviors were not available. As other studies have done, we assumed that clients seeking STD diagnosis had engaged in sexual risk behavior; however, we were unable to distinguish higher from lower risk sexual behaviors. Study strengths include L.A. VOICES' complex, probabilistic sampling strategy, which enhances the generalizability of the findings to adults in similar urban public health settings. Using age 50 to mark the beginning of older adulthood enables comparisons across aging-related studies (Centers for Disease Control and Prevention, 2008; Centers for Disease Control and Prevention et al., 2009).

In conclusion, our findings show that even in venues where HIV prevalence is high and HIV testing is available, many clients – especially, those 50 and older – do not receive HIV testing as recommended. Fully implementing the routine HIV testing recommendations and extending testing to all clients regardless of age could increase HIV testing among older adults and reduce aging-related disparities in late HIV diagnosis.

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